

REMARKS

Claims 1-25 remain pending in this application. Claims 1-25 have been finally rejected by the Examiner.

The Examiner has rejected claims 1, 3, and 5 under 35 USC §103(a) as being unpatentable over Vaartstra (previously cited) in view of Campbell (newly cited) and further in view of Aitchison (newly cited). In particular, the Examiner relies on Vaartstra for teaching some basic structure of a chemical vapor deposition (CVD) apparatus. However, the Examiner recognizes several deficiencies in Vaartstra, including at least the failure to teach:

- “a first precursor gas source with a first valve”,
- “a second precursor gas source with a second valve”,
- “a gas phase reaction trap”.

Therefore, the Examiner has now cited Campbell for showing first, second and third valved gas sources that permit sequential flow of processing gases. The Examiner then suggested it would be obvious to combine these teachings.

However, the Examiner still recognizes that the combination of Vaartstra and Campbell fails to teach the use of a gas phase reaction trap as required by the present claims. Therefore, the Examiner further relies upon Aitchison, suggesting that Aitchison teaches a gas phase reaction trap connected between a reaction chamber and a backing pump, “wherein the, said trap has [having] a residence time at least equal to one deposition cycle”. The Examiner then concludes that the combination of Vaartstra, Campbell and Aitchison would be obvious to one skilled in the art. While unstated, it is presumed that the Examiner also believes that such a suggested combination would result in an apparatus as currently being claimed.

These rejections are respectfully traversed and it is respectfully submitted that the present invention is patentable distinct from the references cited.

Initially, it is noted that to support a conclusion of obviousness based on a combination of prior art references, either the references must expressly or impliedly suggest combination, or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teaching of the references. (See Ex parte Clapp, 227 USPQ 972; PTO Bd of APP INT, 1985.) Further, obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive that supports the combination. (See ACS Hospital Systems, Inc. v. Montefiore Hospitals, 221 USPQ 929; Fed Cir. 1984.)

In light of the above, there is certainly no express or implied teaching that would lead one skilled in the art to combine various pieces of Vaartstra , Campbell and Aitchison. Further, the Examiner has failed to provide any showing that supports the combination. Rather, the Examiner has provided relatively broad reasons; e.g., “because these independent lines minimizes the reaction of the precursor gases in the pump lines”; “because a trap can further promote the complete removal of active gas species”, that have little to do with the actual teachings of the prior art or of the present invention. Further, it is noted the Examiner first requires combination of Vaartstra and Campbell, the result of which requires further combination with Aitchison. Certainly, the Examiner has utterly failed to provide any suggestion in any of the cited references to support such a conclusion. It is respectfully submitted that one skilled in the art would have little, if any reason to look to Campbell to solve perceived issues with Vaartstra, and even less reason to look to Aitchison to solve perceived problems with the combination of Vaartstra and Campbell.

Further, even if these references could be combined, it is totally unclear why one skilled in the art would pick the particular parts of Campbell and Aitchison to include in the apparatus of Vaartstra. In fact, even if combined, such combination still fails to teach or suggest the present invention as claimed. In particular, the Examiner suggests that Aitchison teaches the use of a trap "having a residence time at least equal to one deposition cycle". The only support provided for this suggestion by the Examiner, occurs in a later rejection (discussed below) where the Examiner points to Column 5, lines 26-50 of Aitchison.

A careful review of Aitchison, including the portion noted by the Examiner, it is clear that the Examiner's conclusions concerning Aitchison are simply wrong. In fact, nowhere in Aitchison is there any mention of the residence time for the trap. Rather, Aitchison relies on heat and surface area of a substrate within the trap to increase the efficiency thereof. This is actually fully supported by the particular section of Aitchison noted by the Examiner, that discusses maximizing surface area by arranging several plates in the trap and maintaining the temperature of the trap above the minimum necessary to promote the deposition reaction in the trap. As noted above, Aitchison does not discuss residence time for the trap at all and therefore clearly fails to teach or suggest the present invention.

Because none of the references cited by the Examiner suggest all of the required limitations of the present invention, it is clear that even in combination they can not possibly render the present invention obvious. Therefore, it is respectfully requested that the rejection of claims 1, 3, and 5 under 35 USC §103(a) as being unpatentable over Vaartstra in view of Campbell and further in view of Aitchison be reconsidered and withdrawn.

The Examiner has rejected claim 2 under 35 USC §103(a) as being unpatentable over Vaartstra, Campbell and Aitchison as applied to claim 1, and further in view of Desbiolles (previously cited). In particular, the Examiner relies on Desbiolles

to show a configuration of an apparatus wherein the inlet and outlet of the trap are at that top of the trap. These rejections are respectfully traversed and it is respectfully submitted that the present invention is patentably distinct from the combination of Vaartstra, Campbell, Aitchison and Desbiolles.

As noted above, the combination of Vaartstra, Campbell and Aitchison fails to teach or suggest the present invention as defined by the present claims. Desbiolles was cited for a particular apparatus configuration and clearly fails to overcome the deficiencies noted with respect to Vaartstra, Campbell and Aitchison. Therefore, even with the addition of Desbiolles, it is clear that the present invention is patentably distinct from the suggested combination.

It is respectfully requested that the rejection of claim 2 under 35 USC §103(a) as being unpatentable over Vaartstra, Campbell and Aitchison and further in view of Desbiolles be reconsidered and withdrawn.

The Examiner has also rejected claim 6 under 35 USC §103(a) as being unpatentable over Vaartstra, Campbell and Aitchison as applied to claim 1 and further in view of Mariella (previously cited). The Examiner relies on Mariella for the teaching of an electrode and ground connection to a trap, which the Examiner admits is not found in Vaartstra, Campbell or Aitchison. These rejections are respectfully traversed and it is respectfully submitted that the present invention is patentably distinct from the combination of Vaartstra, Campbell and Aitchison and Mariella.

As noted above, the combination of Vaartstra, Campbell and Aitchison fails to teach or suggest the present invention as defined by the present claims. Mariella was cited for a particular showing of the use of an electrode in a trap but clearly fails to overcome the deficiencies noted with respect to Vaartstra, Campbell and

Aitchison. Therefore, even with the addition of Mariella, it is clear that the present invention is patentably distinct from the suggested combination.

It is respectfully requested that the rejection of claim 6 under 35 USC §103(a) as being unpatentable over Vaartstra, Campbell and Aitchison and further in view of Mariella be reconsidered and withdrawn.

The Examiner has also rejected claims 4 and 7 under 35 USC §103(a) as being unpatentable over Vaartstra, Campbell and Aitchison as applied to claim 1 and further in view of Robles (previously cited). The Examiner relies on Robles for two purposes, first to teach increasing to residence time in a deposition chamber through changes to various parameters and second to show the use of a surge flow suppresser that is not found in any of Vaartstra, Campbell or Aitchison. These rejections are respectfully traversed and it is respectfully submitted that the present invention is patentably distinct from the combination of Vaartstra, Campbell, Aitchison and Robles.

The combination of Vaartstra, Campbell and Aitchison fails to teach or suggest the present invention as defined by the present claims as fully set forth above. With respect to the use of Robles to show use of a surge flow suppresser, it is clear that Robles fails to remedy the deficiencies noted with respect to Vaartstra, Campbell and Aitchison. Therefore, even with the addition of Robles, it is clear that the present invention is patentably distinct from the suggested combination.

With respect to increasing residence time in a deposition chamber, it is noted that this is entirely different than the present invention wherein residence time in a trap is at least equal to one deposition cycle. Residence time in a deposition chamber and residence time in a trap are not the same thing and would be adjusted for very different purposes. Despite the Examiner's attempt to explain these differences away by indicting that they are nothing more than "processing

variables", it is clear that one skilled in the art would not look to Robles for overcoming the deficiencies of Vaartstra, Campbell and Aitchison. Further, even if combined, one skilled in the art would have to rely on Robles for its actual teaching and might increase residence time in a deposition chamber. There is simply no motivation for one skilled in the art to adjust residence time in a trap based on the teachings of Robles.

It is respectfully requested that the rejection of claims 4 and 7 under 35 USC §103(a) as being unpatentable over Vaartstra, Campbell and Aitchison and further in view of Robles be reconsidered and withdrawn.

Claims 8, 10, 12, 14, 15, 16, 18, 19, 21 and 23 have been rejected under 35 USC §103(a) as being unpatentable over Campbell in view of Aitchison. These rejections are respectfully traversed and it is respectfully submitted that the present claims are patentably distinct from Campbell in view of Aitchison.

As fully explained above, the combination of Campbell and Aitchison can not possible render obvious the present invention as defined by the instant claims. The Examiner recognizes that Campbell fails to discuss or suggest the use of a trap. As noted above, while Aitchison discloses a trap, it does not even mention residence time for the trap. Rather, Aitchison relies on heat and surface area of a substrate within the trap to increase the efficiency thereof. Therefore, even if these references could be combined as suggested by the Examiner, such a combination would not result in the present invention. Because neither Campbell nor Aitchison suggest all of the required limitations of the present invention, it is clear that even in combination they can not possible render the present invention obvious.

Therefore, it is respectfully requested that the rejection of claims 8, 10, 12, 14, 15, 16, 18, 19, 21 and 23 under 35 USC §103(a) as being unpatentable over Campbell in view of Aitchison be reconsidered and withdrawn.

The Examiner has rejected claims 9 and 20 under 35 USC §103(a) as being unpatentable over Campbell and Aitchison as applied to claims 8 and 18, and further in view of Desbiolles. As previously, the Examiner relies on Desbiolles to show a configuration of an apparatus wherein the inlet and outlet of the trap are at that top of the trap. These rejections are respectfully traversed and it is respectfully submitted that the present invention is patentably distinct from the combination of Campbell, Aitchison and Desbiolles.

As noted above, the combination of Campbell and Aitchison fails to teach or suggest the present invention as defined by the present claims. Desbiolles was cited for a particular apparatus configuration and clearly fails to overcome the deficiencies noted with respect to Campbell and Aitchison. Therefore, even with the addition of Desbiolles, it is clear that the present invention is patentably distinct from the suggested combination.

It is respectfully requested that the rejection of claim 9 and 20 under 35 USC §103(a) as being unpatentable over Campbell and Aitchison and further in view of Desbiolles be reconsidered and withdrawn.

The Examiner has also rejected claims 13 and 24 under 35 USC §103(a) as being unpatentable over Campbell and Aitchison as applied to claims 8 and 18 and further in view of Mariella. It is noted that in the statement of rejection the Examiner refers to the combination of Vaartstra, Campbell and Aitchison as applied to claim 8 and 18. This is an apparent error on the part of the Examiner as only Campbell and Aitchison were cited in the rejection of claim 8 and 18.

The Examiner again relies on Mariella for the teaching of an electrode and ground connection to a trap, which the Examiner admits is not found in Campbell or Aitchison. These rejections are respectfully traversed and it is respectfully

submitted that the present invention is patentably distinct from the combination of Campbell and Aitchison and Mariella.

As noted above, the combination of Campbell and Aitchison fails to teach or suggest the present invention as defined by the present claims. Mariella was cited for a particular showing of the use of an electrode in a trap but clearly fails to overcome the deficiencies noted with respect to Campbell and Aitchison. Therefore, even with the addition of Mariella, it is clear that the present invention is patentably distinct from the suggested combination.

It is respectfully requested that the rejection of claim 13 and 24 under 35 USC §103(a) as being unpatentable over Campbell and Aitchison and further in view of Mariella be reconsidered and withdrawn.

The Examiner has also rejected claims 11, 22 and 25 under 35 USC §103(a) as being unpatentable over Campbell and Aitchison as applied to claim 18 and further in view of Robles. The Examiner relies on Robles for the same showings discussed above. These rejections are respectfully traversed and it is respectfully submitted that the present invention is patentably distinct from the combination of Campbell, Aitchison and Robles.

As noted above Campbell and Aitchison fail to teach or suggest the present invention as defined by the present claims. Also as noted above there is simply no motivation for one skilled in the art to adjust residence time in a trap based on the teachings of Robles.

It is respectfully requested that the rejection of claims 11, 22 and 25 under 35 USC §103(a) as being unpatentable over Campbell and Aitchison and further in view of Robles be reconsidered and withdrawn.

Finally, claim 17 has been rejected under 35 USC §103(a) as being unpatentable over Campbell and Aitchison as applied to claim 14 and further in view of Robles. This rejection is respectfully traversed and it is respectfully submitted that the present invention is patentably distinct from the combination of Campbell, Aitchison and Robles.

The Examiner's explanation as to why one skilled in the art would use the teachings of Robles to adjust residence time in the trap of Aitchison is a classic example of the use of improper hindsight. In particular, the Examiner has picked and chosen concepts from several references and only in light of the teachings of the present application found a complicated way to combine them. There is simply nothing in the cited references, taken alone or in any combination that suggests the present invention as set forth in the present claims.

It is respectfully requested that the rejection of claim 17 under 35 USC §103(a) as being unpatentable over Campbell and Aitchison and further in view of Robles be reconsidered and withdrawn.

In light of the above remarks, it is respectfully that the all of the rejections raised by the Examiner in the Office Action of 25 July 2006 have been overcome and it is respectfully submitted that the present application is in condition for allowance. Further action consistent therewith is respectfully requested.

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